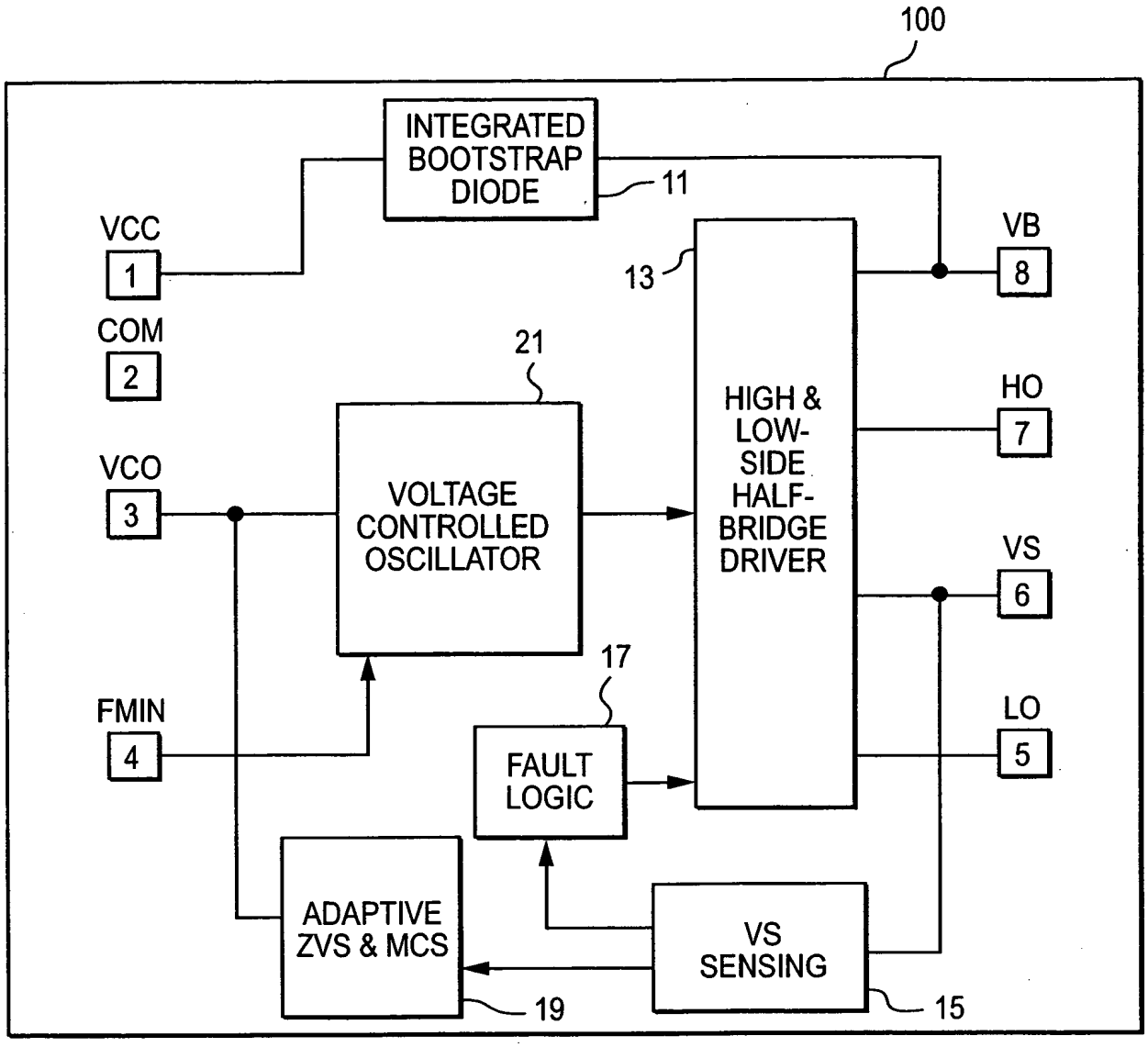
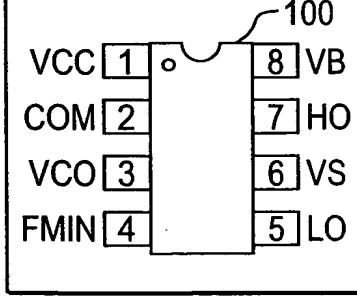


FIG. 1



PIN #	SYMBOL	DESCRIPTION
1	VCC	SUPPLY VOLTAGE
2	COM	IC POWER & SIGNAL GROUND
3	VCO	VOLTAGE CONTROLLED OSCILLATOR INPUT
4	FMIN	MINIMUM FREQUENCY SETTING
5	LO	LOW-SIDE GATE DRIVER OUTPUT
6	VS	HIGH-SIDE FLOATING RETURN
7	HO	HIGH-SIDE GATE DRIVER OUTPUT
8	VB	HIGH-SIDE GATE DRIVER FLOATING SUPPLY

FIG. 2

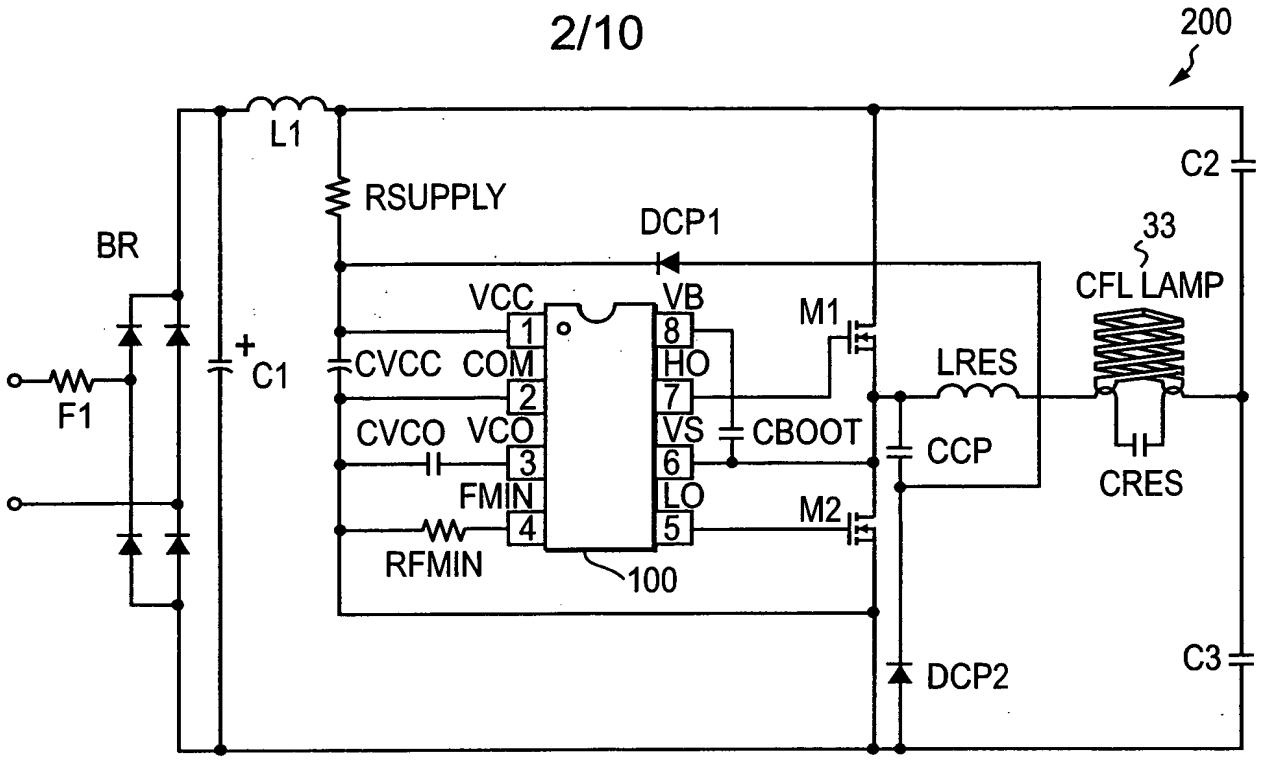

200
L1
RSUPPLY
DCP1
C2
33
CFL LAMP
BR
VCC
VB
M1
CVCC
COM
HO
LRES
F1
C1
CVCO
VCO
VS
CBOOT
CCP
FMIN
LO
M2
CRES
RFMIN
100
DCP2
C3

FIG. 3

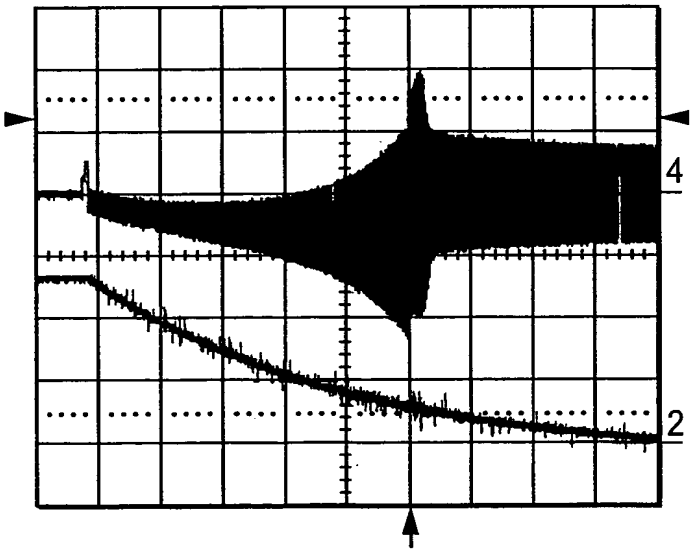

4
2

FIG. 4

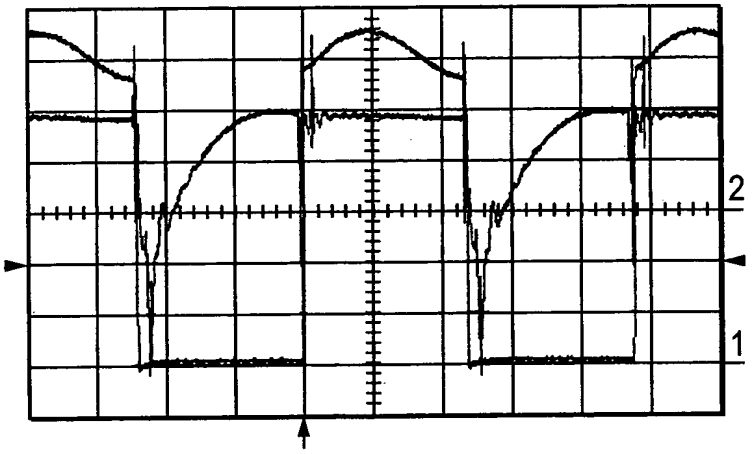


FIG. 5

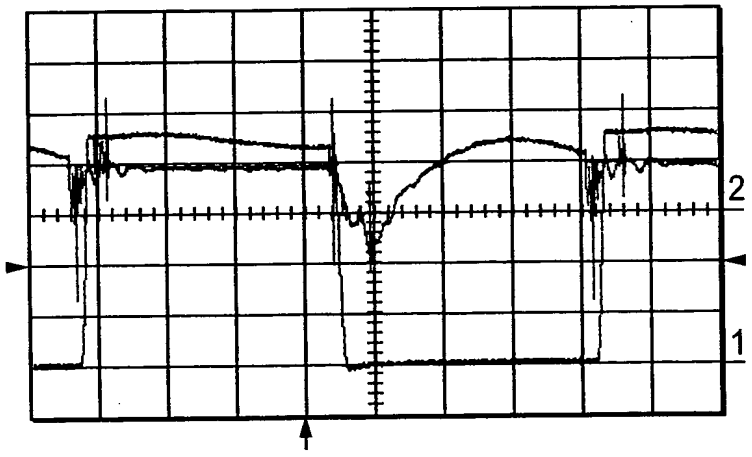


FIG. 6

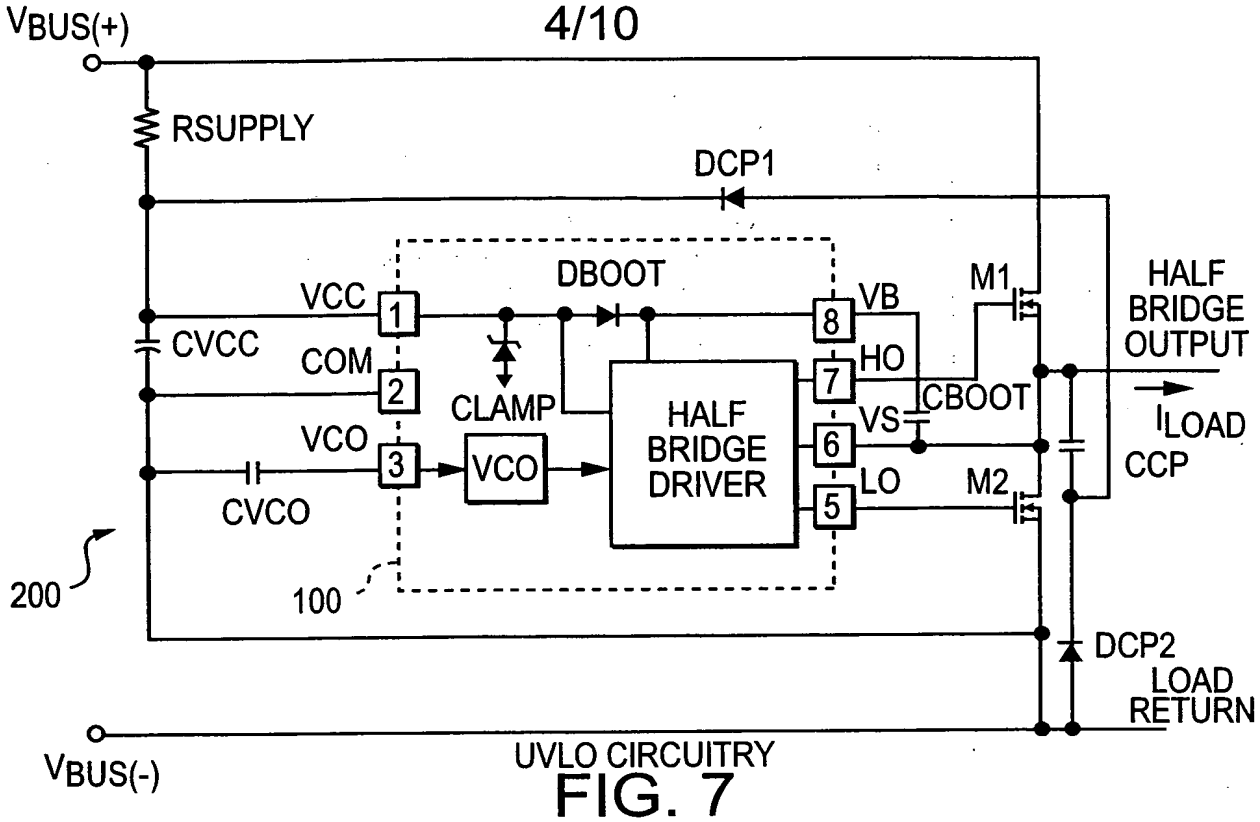

VBUS(+)
RSUPPLY
DCP1
VCC
CVCC
COM
CLAMP
VCO
CVCO
DBOOT
HALF BRIDGE DRIVER
VB
HO
VS
LO
CBOOT
M1
M2
HALF BRIDGE OUTPUT
ILOAD
CCP
DCP2
LOAD RETURN
200
100
VBUS(-)
UVLO CIRCUITRY

FIG. 7

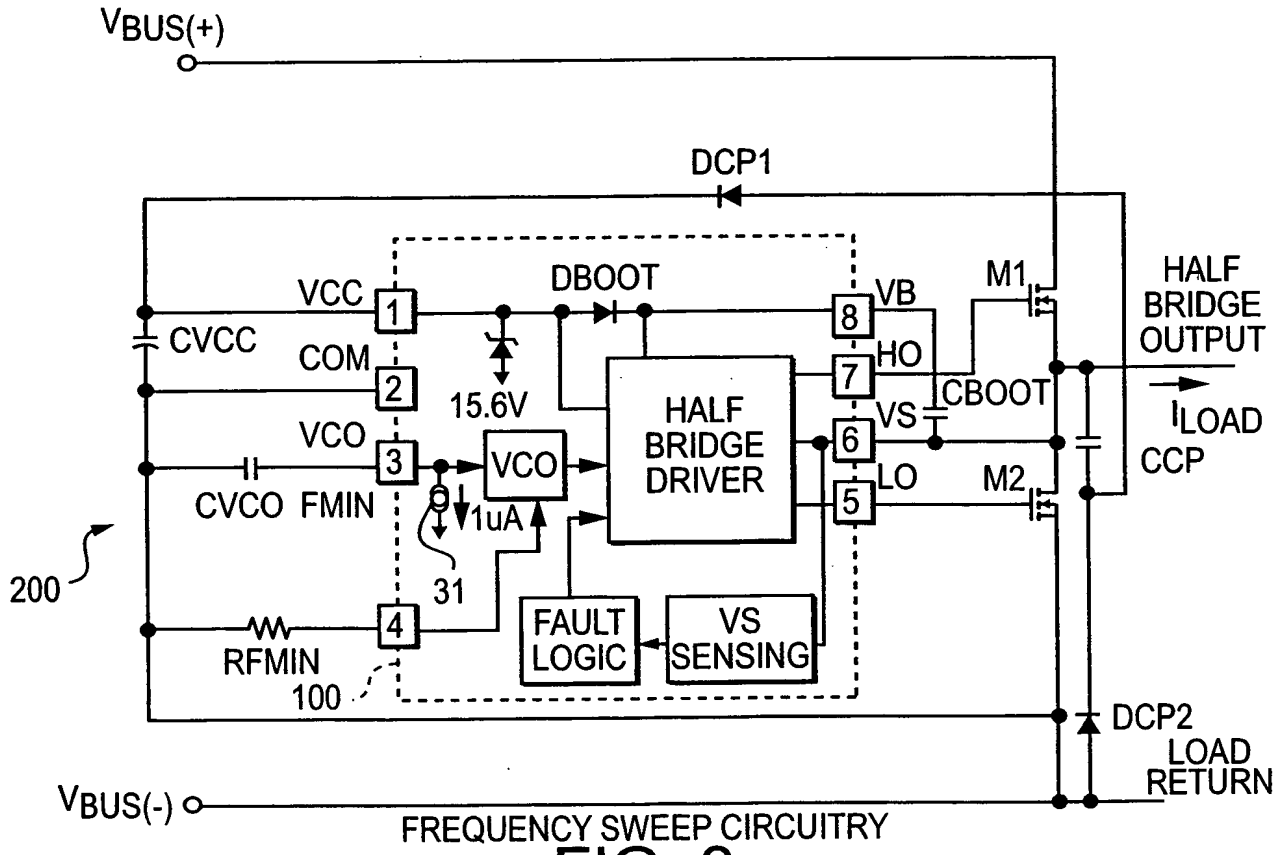

VBUS(+)
DCP1
VCC
CVCC
COM
15.6V
VCO
CVCO FMIN
1uA
31
RFMIN
FAULT LOGIC
VS SENSING
DBOOT
HALF BRIDGE DRIVER
VB
HO
VS
LO
CBOOT
M1
M2
HALF BRIDGE OUTPUT
ILOAD
CCP
DCP2
LOAD RETURN
200
100
VBUS(-)
FREQUENCY SWEEP CIRCUITRY

FIG. 8

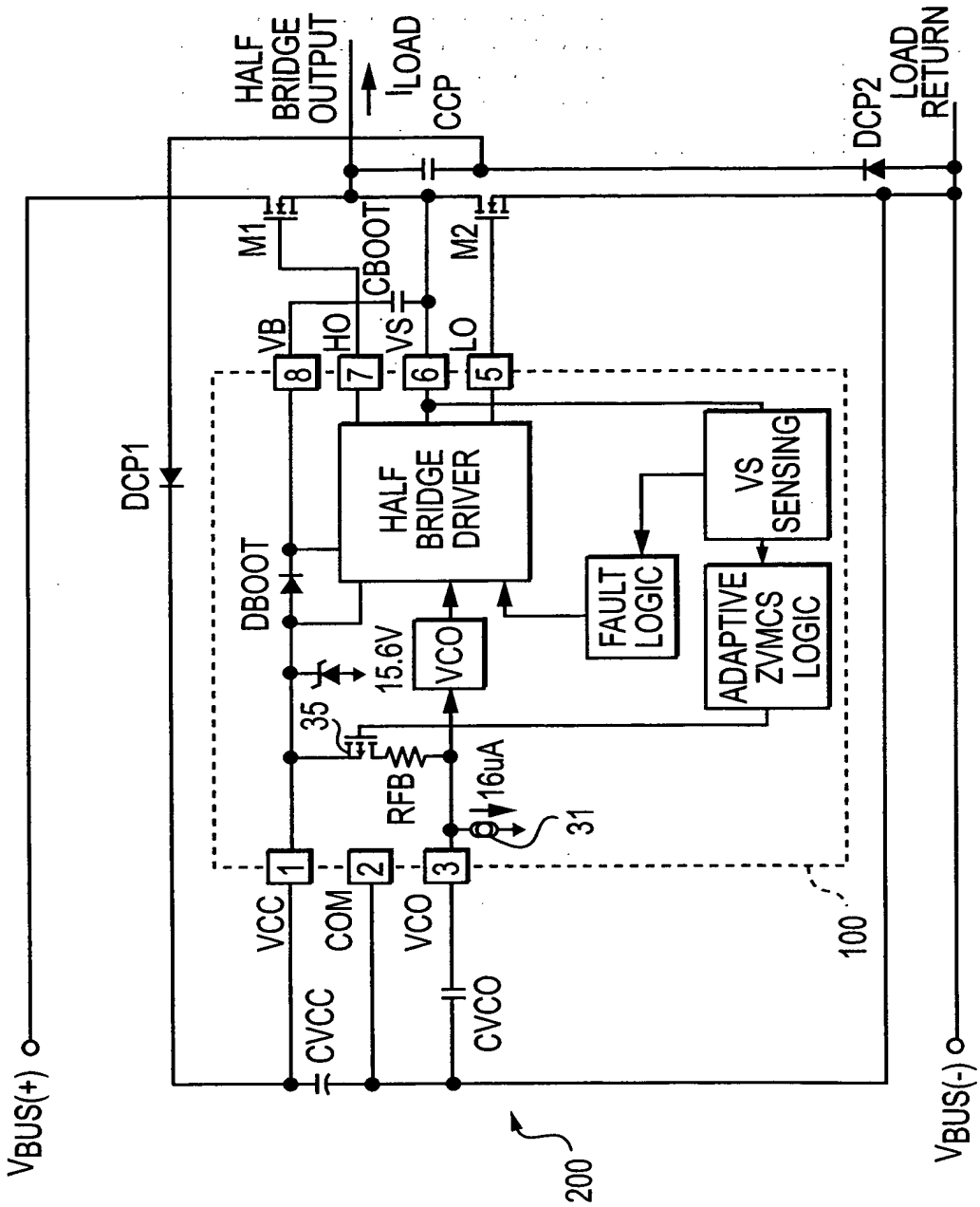

HALF BRIDGE OUTPUT
ILOAD
CCP
DCP2
LOAD RETURN
M1
CBOOT
M2
VB
HO
VS
LO
8
7
6
5
DCP1
HALF BRIDGE DRIVER
VS SENSING
DBOOT
FAULT LOGIC
ADAPTIVE ZVMCS LOGIC
15.6V
VCO
35
RFB
16uA
31
1
2
3
VCC
COM
VCO
CVCC
CVCO
100
200
VBUS(+)
VBUS(-)
ADAPTIVE ZVMCS CIRCUITRY

FIG. 9

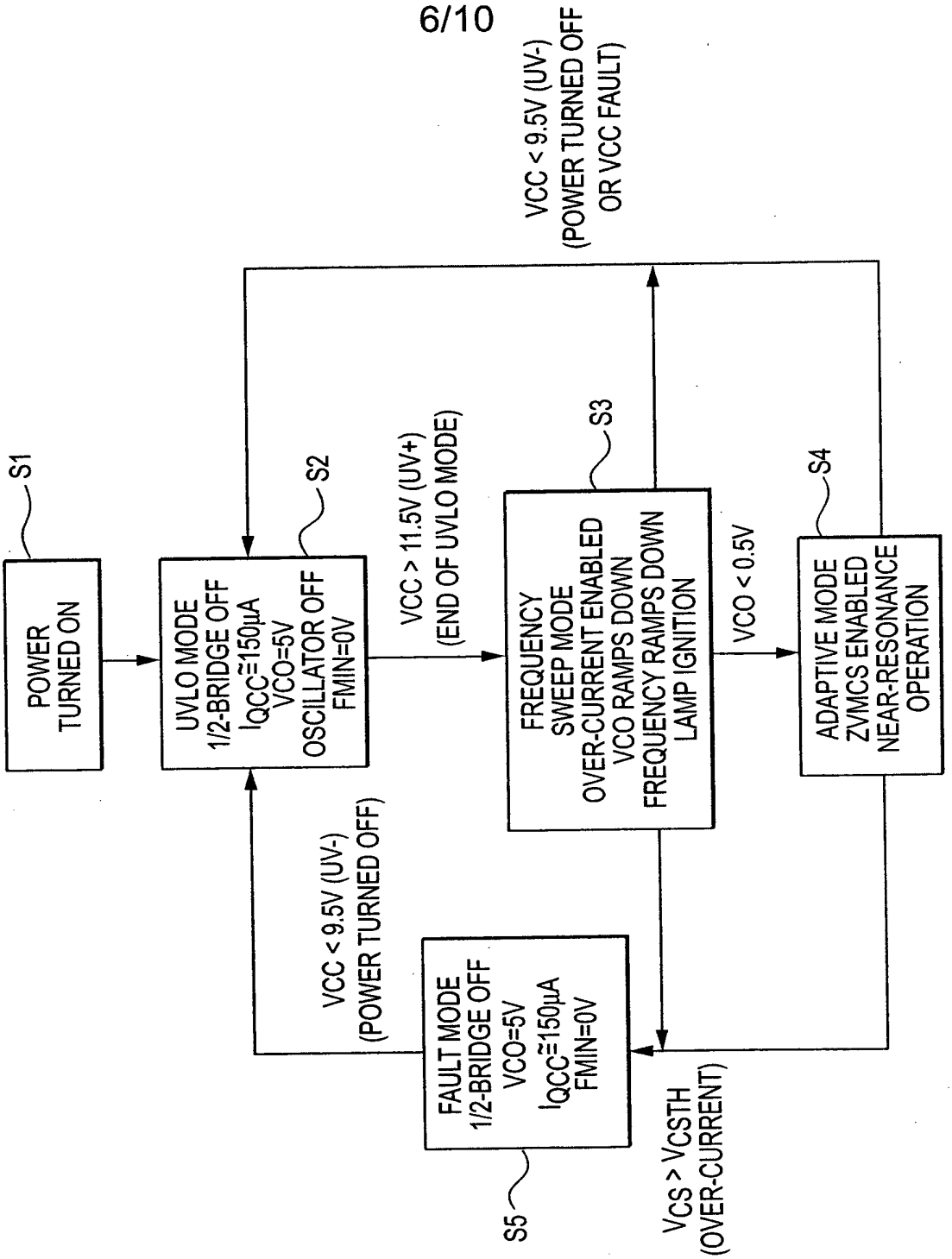

POWER TURNED ON
S1
UVLO MODE
1/2-BRIDGE OFF
IQCC≅150µA
VCO=5V
OSCILLATOR OFF
FMIN=0V
S2
VCC > 11.5V (UV+)
(END OF UVLO MODE)
FREQUENCY SWEEP MODE
OVER-CURRENT ENABLED
VCO RAMPS DOWN
FREQUENCY RAMPS DOWN
LAMP IGNITION
S3
VCO < 0.5V
ADAPTIVE MODE
ZVMCS ENABLED
NEAR-RESONANCE OPERATION
S4
VCC < 9.5V (UV-)
(POWER TURNED OFF
OR VCC FAULT)
VCC < 9.5V (UV-)
(POWER TURNED OFF)
FAULT MODE
1/2-BRIDGE OFF
VCO=5V
IQCC≅150µA
FMIN=0V
S5
VCS > VCSTH
(OVER-CURRENT)

FIG. 10

TABLE 1

RECOMMENDED OPERATING CONDITIONS
FOR PROPER OPERATION THE DEVICE SHOULD BE USED WITHIN THE RECOMMENDED CONDITIONS.

SYMBOL	DEFINITION	MIN	MAX	UNITS
V_{BS}	HIGH-SIDE FLOATING SUPPLY VOLTAGE	V_{CC} - 0.7	V_{CLAMP}	V
V_S	STEADY STATE HIGH-SIDE FLOATING SUPPLY OFFSET VOLTAGE	-1	600	
V_{CC}	SUPPLY VOLTAGE	V_{CCUV+}	V_{CLAMP}	
I_{CC}	SUPPLY CURRENT	NOTE 2	10	mA
R_{FMIN}	MINIMUM FREQUENCY SETTING RESISTANCE	10	100	$k\Omega$
V_{VCO}	VCO PIN VOLTAGE	0	5	V
T_J	JUNCTION TEMPERATURE	-25	125	°C

NOTE 2: ENOUGH CURRENT SHOULD BE SUPPLIED INTO THE VCC PIN TO KEEP THE INTERNAL 15.6V ZENER CLAMP DIODE ON THIS PIN REGULATING ITS VOLTAGE, V_{CLAMP}.

TABLE 2

ABSOLUTE MAXIMUM RATINGS

ABSOLUTE MAXIMUM RATINGS INDICATE SUSTAINED LIMITS BEYOND WHICH DAMAGE TO THE DEVICE MAY OCCUR. ALL VOLTAGE PARAMETERS ARE ABSOLUTE VOLTAGES REFERENCED TO COM, ALL CURRENTS ARE DEFINED POSITIVE INTO ANY LEAD. THE THERMAL RESISTANCE AND POWER DISSIPATION RATINGS ARE MEASURED UNDER BOARD MOUNTED AND STILL AIR CONDITIONS.

SYMBOL	DEFINITION		MIN	MAX	UNITS
V_B	HIGH-SIDE FLOATING SUPPLY VOLTAGE		-0.3	625	V
V_S	HIGH-SIDE FLOATING SUPPLY OFFSET VOLTAGE		V_B - 25	V_B + 0.3	
V_{HO}	HIGH-SIDE FLOATING OUTPUT VOLTAGE		V_S - 0.3	V_B + 0.3	
V_{LO}	LOW-SIDE OUTPUT VOLTAGE		-0.3	V_{CC} + 0.3	
I_{OMAX}	MAXIMUM ALLOWABLE OUTPUT CURRENT (HO, LO) DUE TO EXTERNAL POWER TRANSISTOR MILLER EFFECT		-500	500	mA
V_{VCO}	VOLTAGE CONTROLLED OSCILLATOR INPUT VOLTAGE		-0.3	VCC + 0.3	V
I_{CC}	SUPPLY CURRENT (NOTE 1)		-20	20	mA
dV/dt	ALLOWABLE OFFSET VOLTAGE SLEW RATE		-50	50	V/ns
P_D	PACKAGE POWER DISSIPATION @ TA ≤ +25°C	(8-PIN DIP)	---	1	W
	$PD = (T_{JMAX}-T_A)/R_{\theta JA}$	(8-PIN SOIC)	---	0.625	
$R_{\theta JA}$	THERMAL RESISTANCE, JUNCTION TO AMBIENT	(8-PIN DIP)	---	125	°C/W
		(8-PIN SOIC)	---	200	
T_J	JUNCTION TEMPERATURE		-55	150	°C
T_S	STORAGE TEMPERATURE		-55	150	
T_L	LEAD TEMPERATURE (SOLDERING, 10 SECONDS)		---	300	

NOTE 1: THIS IC CONTAINS A ZENER CLAMP STRUCTURE BETWEEN THE CHIP VCC AND COM, WHICH HAS A NOMINAL BREAKDOWN VOLTAGE OF 15.6V. PLEASE NOTE THAT THIS SUPPLY PIN SHOULD NOT BE DRIVEN BY A DC, LOW IMPEDANCE POWER SOURCE GREATER THAN THE VCLAMP SPECIFIED IN THE ELECTRICAL CHARACTERISTICS SECTION.

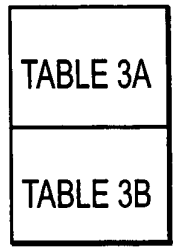


TABLE 3

TABLE 3A

ELECTRICAL CHARACTERISTICS

$V_{CC} = V_{BS} = V_{BIAS} = 14V$ +/-0.25, $C_{LO} = C_{HO} = 1000$ pF, $T_A = 25C$ UNLESS OTHERWISE SPECIFIED.

SYMBOL	DEFINITION	MIN	TYPE	MAX	UNITS	TEST CONDITIONS
SUPPLY CHARACTERISTICS						
V_{CCUV+}	V_{CC} SUPPLY UNDERVOLTAGE POSITIVE GOING THRESHOLD	10.5	11.5	12.5	V	V_{CC} RISING FROM 0V
V_{CCUV-}	V_{CC} SUPPLY UNDERVOLTAGE NEGATIVE GOING THRESHOLD	8.5	9.5	10.5		V_{CC} FALLING FROM 14V
V_{UVHYS}	V_{CC} SUPPLY UNDERVOLTAGE LOCKOUT HYSTERESIS	1.5	2.0	3.0		
I_{QCCUV}	UVLO MODE QUIESCENT CURRENT	50	120	200	µA	V_{CC}=11V
I_{QCCFLT}	FAULT-MODE QUIESCENT CURRENT	---	180	---		
I_{QCC}	QUIESCENT V_{CC} SUPPLY CURRENT	---	1.8	---	mA	V_{CC}=14V
I_{CC50k}	V_{CC} SUPPLY CURRENT, f = 50kHz	---	1.8	---		
V_{CLAMP}	V_{CC} ZENER CLAMP VOLTAGE	14.5	15.6	16.5	V	I_{CC}=10mA
FLOATING SUPPLY CHARACTERISTICS						
I_{QBS0}	QUIESCENT VBS SUPPLY CURRENT	-1	0	5	µA	$V_{HO} = V_S$
I_{QBS1}	QUIESCENT VBS SUPPLY CURRENT	---	28	---		$V_{HO} = V_B$
V_{BSMIN}	MINIMUM REQUIRED V_{BS} VOLTAGE FOR PROPER HO FUNCTIONALITY	---	2.5	---	V	
I_{LK}	OFFSET SUPPLY LEAKAGE CURRENT	---	---	50	µA	$V_B = V_S$ 600V

OSCILLATOR I/O CHARACTERISTICS						
$F_{VCO(MIN)}$	MINIMUM OSCILLATOR FREQUENCY	---	30	---	kHz	VCO=0V, RFMIN=39K
$F_{VCO(MAX)}$	MAXIMUM OSCILLATOR FREQUENCY	---	110	---		VCO=5V, FRMIN=39K
D	OSCILLATOR DUTY CYCLE	---	50	---	%	
T_{DLO}	LO OUTPUT DEADTIME	---	1.2	---	µS	RFMIN=39K
T_{DHO}	HO OUTPUT DEADTIME	---	1.2	---		RFMIN=39K
I_{VCOPH}	PREHEAT MODE & FREQUENCY SWEEP MODE VCO PIN DISCHARGE CURRENT	---	1.0	---	µA	CVO<VCC
$I_{VCOADPT}$	ADAPTIVE MODE VCO PIN DISCHARGE CURRENT	---	16.0	---		
V_{VCOFLT}	FAULT MODE & UVLO MODE VCO PIN VOLTAGE	---	5	---	V	
GATE DRIVEROUTPUT CHARACTERISTICS						
V_{OL}	LOW LEVEL OUTPUT VOLTAGE (HO OR LO)	---	---	100	mV	
V_{HL}	HIGH LEVEL OUTPUT VOLTAGE (HO OR LO)	---	---	100		
T_{RISE}	TURN ON RISE TIME	---	---	150	NS	
T_{FALL}	TURN OFF FALL TIME	---	---	100		
PROTECTION CHARACTERISTICS						
V_{CSTH}	PEAK OVER CURRENT LATCH THRESHOLD VOLTAGE	---	5	---	V	
MINIMUM FREQUENCY SETTING CHARACTERISTICS						
V_{FMIN}	FMIN PIN VOLTAGE DURING NORMAL OPERATION	---	5.1	---	V	
$V_{FMINFLT}$	FMIN PIN VOLTAGE DURING FAULT MODE	---	0.0	---	V	$V_{CS} > V_{CSTH}$

TABLE 3B